ALLEN-BRADLEY

Bulletin 1203
Serial Communications Module

PPG OPTOMUX
Catalog Number 1203-GD9, –GK9

User Manual

Important User Information

Because of the variety of uses for this equipment and because of the differences between this solid-state equipment and electromechanical equipment, the user of and those responsible for applying this equipment must satisfy themselves as to the acceptability of each application and use of the equipment. In no event will Allen-Bradley Company be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The illustrations shown in this manual are intended solely to illustrate the text of this manual. Because of the many variables and requirements associated with any particular installation, the Allen-Bradley Company cannot assume responsibility or liability for actual use based upon the illustrative uses and applications.

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This information in this manual is organized in numbered chapters. Read each chapter in sequence and perform procedures when you are instructed to do so. Do not proceed to the next chapter until you have completed all procedures.

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attentions help you:

- identify a hazard
- avoid the hazard
- recognize the consequences

IMPORTANT: Identifies information that is especially important for successful application and understanding of the product.

Summary Information

Information for the –GK9 module was added to this manual.

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Chapter 1

Introduction

Manual Objectives

The purpose of this manual is to provide you with the necessary information to apply the Serial Communications Module which is available for products that include the SCANport™ communications port. Described in this manual are methods for installing, configuring, and troubleshooting the Serial Communications Module.

For information on specific features of Allen-Bradley products mentioned herein, refer to the product user manual.

Important: Read this manual in its entirety before installing, operating, servicing, or initializing the Serial Communications Module.

Who Should Use This Manual

This manual is intended for qualified service personnel responsible for setting up and servicing of these devices. You must have previous experience with and a basic understanding of communications terminology, configuration procedures, required equipment, and safety precautions.

To make efficient use of this communications module, you must be able to program and operate serial communications devices, as well as have a basic understanding of the parameter settings and functions of the device to which you are communicating.

Vocabulary

In this manual we refer to the:

- Serial Communications Module as *communications module*
- Variable Frequency AC Drive (Bulletin 1336 PLUS) as the *drive* or *SCANport device*
- Earth Ground as *GND*

Firmware Support

This manual supports communications module firmware versions 1.xx (the “xx” designator may vary). Features that work with specific firmware versions will be denoted as such.

Manual Organization

This manual is divided into the following chapters.

Chapter	Title	Topics Covered
1	Introduction	Manual objectives, audience, vocabulary, firmware support information, manual organization, safety precautions, and serial device compatibility
2	Product Description	Communications Module features, configuration, and diagnostics
3	Installation	Mounting, power connections, switch configuration, cabling, and hardware
4	Troubleshooting	LED indications and fault descriptions
5	Specifications	Environmental, electrical, and communications specifications

Safety Precautions

ATTENTION: Only personnel familiar with SCANport devices and associated machinery should plan or implement the installation, start-up, configuration, and subsequent maintenance of the serial communications module. Failure to comply may result in personal injury and/or equipment damage.

ATTENTION: This module contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing, or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference Allen-Bradley Publication 8000–4.5.2, *Guarding Against Electrostatic Damage*, or any other applicable ESD protection handbook.

Chapter 2

Product Description

Chapter Objectives

In this chapter, you will read about:

- Communications module features
- Location of configuration switches

Module Description

This module is designed to be used with the 1336-EN20. It is not compatible with any other SCANport devices. The serial device configurations are as follows:

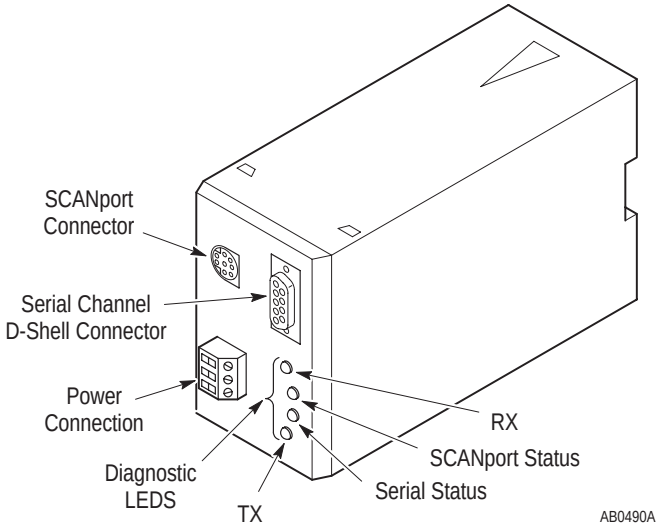
Designation	Enclosure	Power Supply Source	Used With:
Enclosed	IP30	115/230V ac separately supplied	1336-EN20
Enclosed	IP30	24V dc separately supplied	1336-EN20

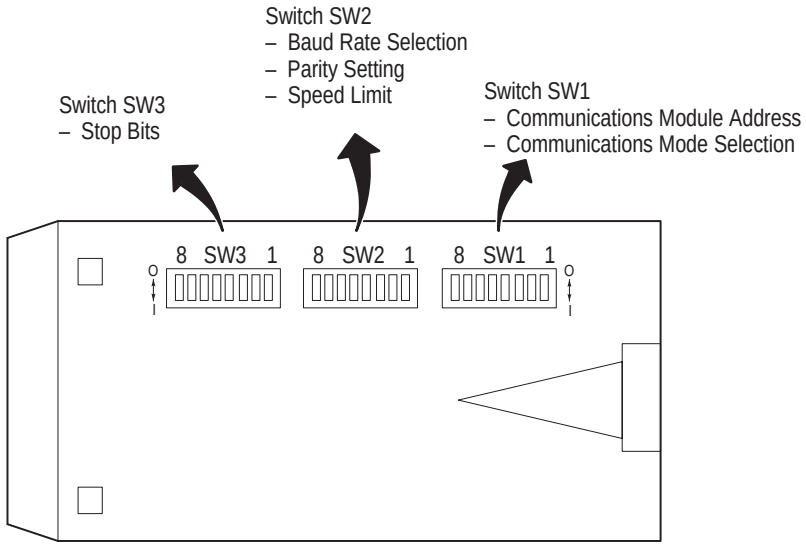
SCANport Device Compatibility

The SCANport Serial Communications Module is compatible with the following Allen-Bradley devices:

Device	Firmware Revision
1336-EN20	All

Figure 2.1
Enclosed Style Serial-to-SCANport Communications Module

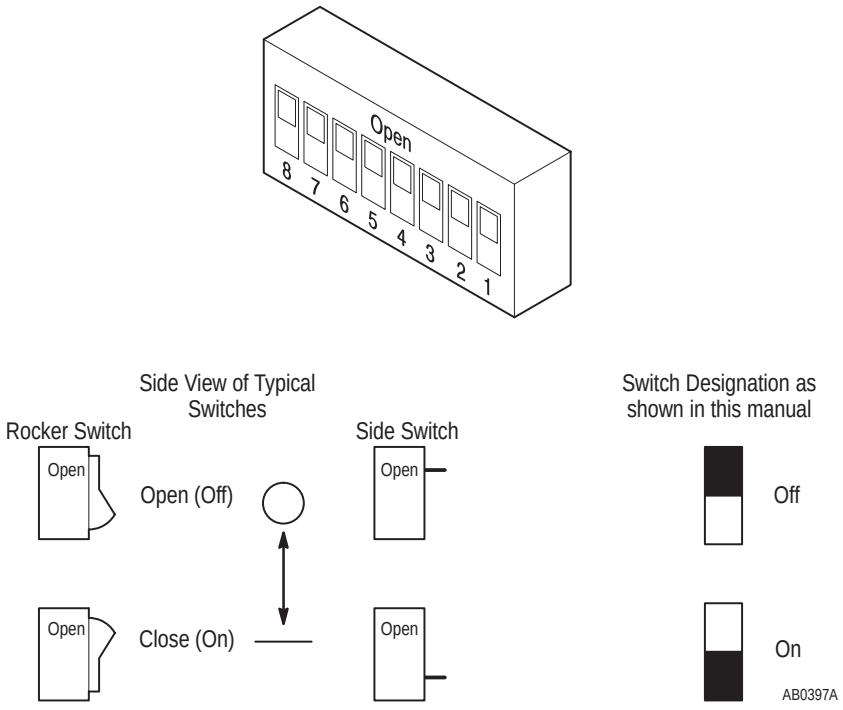




Configuration Switches

The Serial Communications Module has three DIP Switches: SW1, SW2, and SW3 (Figure 2.1). Switches are set ON or OFF as shown in Figure 2.2. For a detailed explanation of switch configuration, refer to Chapter 3, *Installation*.

Figure 2.2
Configuration Switches



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Chapter 3

Installation

Chapter Objectives

In this chapter you will learn how to:

- Mount the communications module
- Configure the communications module
- Connect power
- Connect SCANport and serial communications cables

Read this chapter completely before you attempt to install or configure your communications module. Double check all connections and option selections before you apply power.

Important: Switch selections take effect only on power-up. If you change selections after power is applied, cycle the power to use the new settings.

Setting Module Configuration Switches

This publication describes switches as being either on or off. If the switch assembly has the word OPEN printed on it, the word OPEN corresponds to OFF (0).

In all cases, each serial device must have a unique address the target processor can recognize.

ATTENTION: When you change the switch settings, use a blunt, pointed instrument such as a ball point pen. Do not use a pencil because the lead (graphite) of the pencil may damage the switch assembly.

ATTENTION: Failure to check connections and switch settings for compatibility with your application when configuring the communications module could result in personal injury and/or equipment damage due to unintended or undesirable operation.

ATTENTION: When you configure the system for the first time, disconnect the motor from the machine or process during initial testing.

Factory Switch Settings

Switch	Setting	Communication Mode
SW1-8	Off	Drive Number = 1
SW1-7	Off	
SW1-6	Off	
SW1-5	Off	
SW1-4	Off	
SW1-3	Off	
SW1-2	Off	RS422
SW1-1	On	
SW2-8	Off	Speed Limit Check
SW2-7	Off	Not Used
SW2-6	On	Protocol Selection
SW2-5	On	Parity Enabled
SW2-4	On	Odd Parity (if enabled)
SW2-3	On	19.2k Baud
SW2-2	On	
SW2-1	On	
SW3-8	Off	Stop Bits
SW3-7	Off	
SW3-6	Off	Not Used
SW3-5	Off	
SW3-4	Off	
SW3-3	Off	
SW3-2	Off	
SW3-1	Off	

Switch SW1

Switch SW1 selects:

- Communications mode selection (RS232/RS422/RS485)
- Communications module address

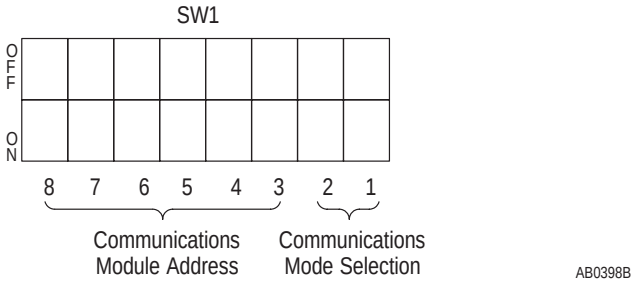

Table 3.A
Switch SW1 Communications Mode Selection

Switch Value (Decimal)	SW1-2	SW1-1	Communications Mode
0	Off	Off	RS232
1	Off	On	RS422
2	On	Off	RS485

Table 3.B
Switch SW1 Communications Module Address Selection

PCC Drive No.	Module Address (Decimal)	Module Address (Octal)	SW1-8	SW1-7	SW1-6	SW1-5	SW1-4	SW1-3
1	0	0	Off	Off	Off	Off	Off	Off
2	1	1	Off	Off	Off	Off	Off	On
3	2	2	Off	Off	Off	Off	On	Off
4	3	3	Off	Off	Off	Off	On	On
5	4	4	Off	Off	Off	On	Off	Off
6	5	5	Off	Off	Off	On	Off	On
7	6	6	Off	Off	Off	On	On	Off
8	7	7	Off	Off	Off	On	On	On

Switch SW2

Switch SW2 selects the baud rate, parity, and speed limit.

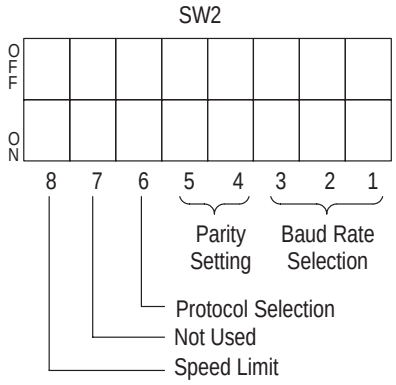

Table 3.C
Switch SW2 Speed Limit Settings

SW2-8	Function
Off	Limit Speed Command to Maximum Speed
On	Stop Drive if Command Speed is greater than Maximum Speed

Table 3.D
Switch SW2 Protocol Selection Settings

SW2-6	Function
Off	Regular OPTOMUX
On	Extended OPTOMUX

Table 3.E
Switch SW2 Parity Settings

SW2-5	SW2-4	Function
Don't Care	Off	Parity Disabled
Off	On	Even Parity
On	On	Odd Parity

Table 3.F
Switch SW2 Baud Rate Selection

Switch Value (Decimal)	SW2-3	SW2-2	SW2-1	Baud Rate
0	Off	Off	Off	110
1	Off	Off	On	300
2	Off	On	Off	600
3	Off	On	On	1200
4	On	Off	Off	2400
5	On	Off	On	4800
6	On	On	Off	9600
7	On	On	On	19200

Switch SW3

Switch SW3 selects Stop Bits.

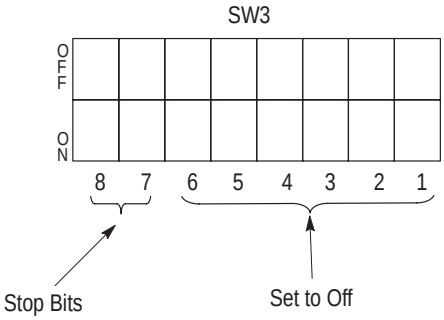

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Table 3.G
Switch SW3-1 – SW3-6 Settings

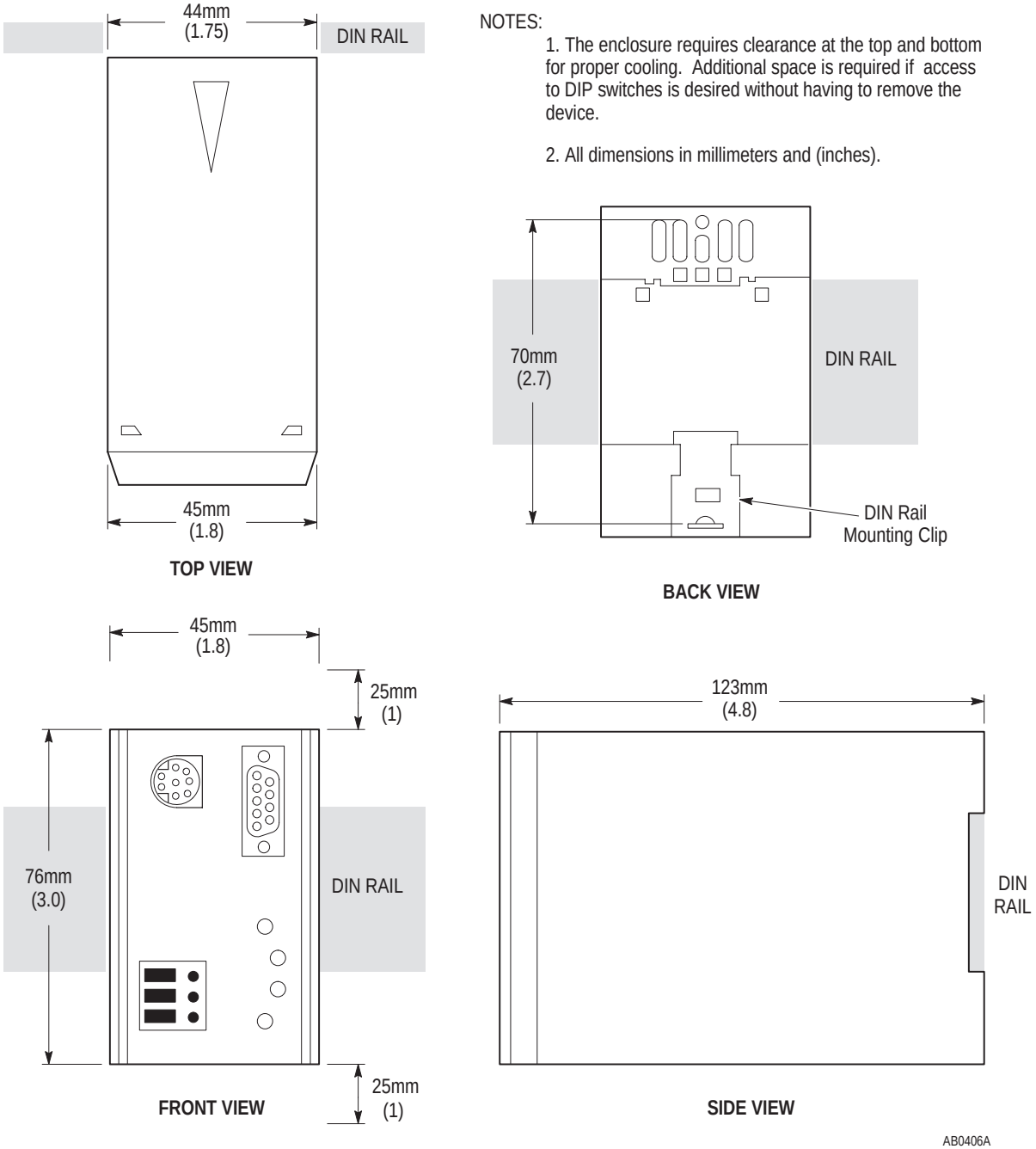
SW3-1 – SW3-6	Function
Off	Must be set to Off position

Table 3.H
Switch SW3 Stop Bit Settings

SW3-8	SW3-7	Stop Bits
Off	Off	1 Stop Bit
Off	On	1 Stop Bit
On	Off	1 Stop Bit
On	On	Illegal

Enclosed Style Communications Module Dimensions

Figure 3.1
Enclosed Style Communications Module Dimensions



NOTES:

1. The enclosure requires clearance at the top and bottom for proper cooling. Additional space is required if access to DIP switches is desired without having to remove the device.

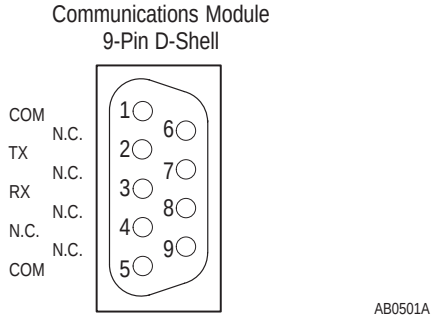
2. All dimensions in millimeters and (inches).

Cable Connections

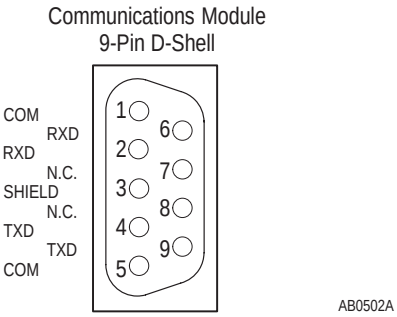
RS485/RS422/RS232 Connection Examples

Figure 3.2

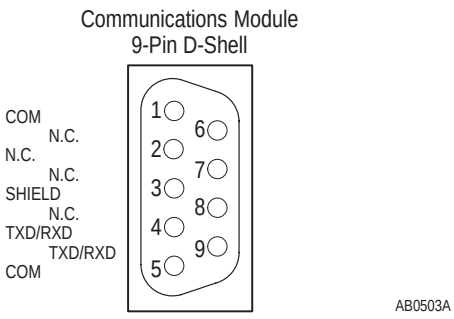
RS232 Mode Port Connection Diagram



RS422 Mode Port Connection Diagram



RS485 Mode Port Connection Diagram



SCANport Link Connection

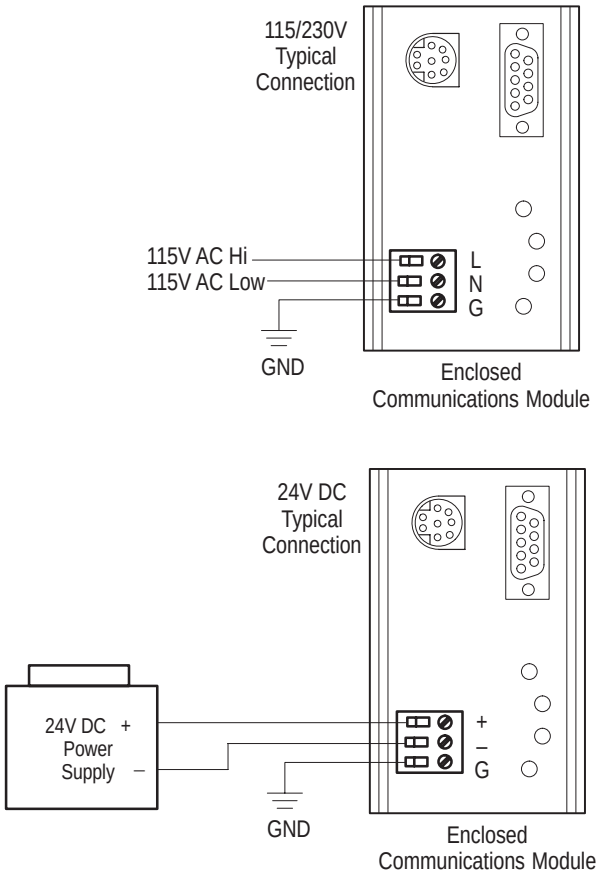
Cable Requirements

SCANport cables are available in either male–to–male or male–to–female configuration. Cables (C) of up to 10 meters (33 feet) can be connected from the master to the SCANport device. If a Port Expander (B1) is used, subtract the cable length from the master to the Port Expander from the cable length used to connect the device to the expander (B1 + C = maximum of 10 meters).

Power Supply Connections

The enclosed communications module is powered from a separate 24V dc or 115/230V ac power supply (Figure 3.3). With the open-style communications module board mounted in the drive, no separate power supply connections are required.

Figure 3.3
Typical Power Supply Connection



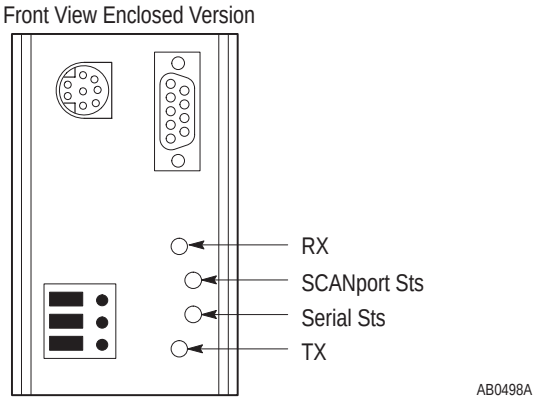
Chapter 4

Troubleshooting

Chapter Objectives

Use this chapter to help troubleshoot your serial communications system using the LED indicators on the front of the device (Figure 4.1). The communications module is a non-serviceable device that should be returned to Allen-Bradley for replacement when a major fault exists that is attributable to the communications module itself.

Figure 4.1
LED Locations



ATTENTION: Servicing energized industrial control equipment can be hazardous. Electrical shock, burns, or unintentional actuation of controlled industrial equipment may cause death or serious injury. Follow the safety-related practices of NFPA 70E, Electrical Safety for Employee Workplaces, when working on or near energized equipment. Do not work alone on energized equipment.

ATTENTION: Do not attempt to defeat or override fault circuits. The cause of a fault indication must be determined and corrected before attempting operation. Failure to correct a drive or system malfunction may result in personal injury and/or equipment damage due to uncontrolled machine system operation.

Table 4.A
LED Troubleshooting Table

Indicator	Color	Description	Recommended Action
Serial Sts	Green (Blinking)	Link OK, off-line	Check configuration switch settings, check for serial cable connection, cycle communications module power
	Green (Steady)	Link OK, on-line	None, system functioning properly
	Red (Steady)	Faulted	Check configuration switch settings, check for serial cable connection, cycle power, replace module
SCANport Sts	Green (Blinking)	Link OK, not connected	Check configuration switch settings, check for serial cable connection, cycle power
	Green (Steady)	Link OK, connected	None
	Red (Steady)	Faulted	Check configuration switch settings, check for serial cable connection, cycle power, replace module
TX	Off	No transmission occurring	Send serial data again
	Amber	Transmission occurring	None
RX	Off	No transmission received	Check data device to verify it is sending data
	Amber	Transmission being received	None

Chapter 5

Specifications

Chapter Objectives

This chapter provides background information and specifications that you may need when installing or applying your communications module.

Product Specifications

	Enclosed Style 115/230V AC	Enclosed Style 24V DC
Catalog Number:	–GD9	–GK9
Environmental:		
Operating Temperature	0 to 50°C (32 to 122°F)	0 to 50°C (32 to 122°F)
Storage Temperature	–40 to 85°C (–40 to 185°F)	–40 to 85°C (–40 to 185°F)
Relative Humidity	0 to 95%, Non-condensing	0 to 95%, Non-condensing
Electrical:		
Input Voltage	85 to 264V ac, 1-phase	24V dc ± 10%
Input Frequency	45 to 63 Hz	NA
Input Current	35mA maximum	0.4 amps maximum
SCANport Load	60mA dc	60mA dc
Communications:		
SCANport Side	SCANport Peripheral Interface	SCANport Peripheral Interface
Serial Side	OPTOMUX	OPTOMUX
Baud Rates	110, 300, 600, 1200, 2400, 4800, 9600, 19.2K	110, 300, 600, 1200, 2400, 4800, 9600, 19.2K
Dimensions:		
NEMA Type 1 (IP30)	45w x 76h x 123d mm (1.8 x 3.0 x 4.8 in.)	45w x 76h x 123d mm (1.8 x 3.0 x 4.8 in.)

Module Compatibility

This module is intended for use with devices that communicate via RS232, RS422, or RS485 hardware standards using OPTOMUX. It is intended to provide a means for transmitting messages between these serial-communications devices and Allen-Bradley SCANport devices.

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Notes

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❑ DESIGN / IMPLEMENT ELECTRICAL SYSTEMS
❑ TRAIN/EDUCATE MACHINE USERS
❑ SUPERVISE FLOOR OPERATIONS

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	NONE	LITTLE	MODERATE	EXTENSIVE
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AC / DC DRIVES	❑	❑	❑	❑
PERSONAL COMPUTERS	❑	❑	❑	❑
NC / CNC CONTROLS	❑	❑	❑	❑
DATA COMMUNICATIONS / LAN	❑	❑	❑	❑

✓ **RATE THE OVERALL QUALITY OF THIS MANUAL BY CIRCLING YOUR RESPONSE BELOW. (1) = POOR (5) = EXCELLENT**

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